UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,193	07/09/2003	Masayuki Tsuchiya	000138A	9222

38834 7590 04/04/2007

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP
1250 CONNECTICUT AVENUE, NW
SUITE 700
WASHINGTON, DC 20036

EXAMINER	
IP, SIKYIN	
ART UNIT	**PAPER NUMBER**
1742	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/04/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/615,193	TSUCHIYA ET AL.	
	Examiner	Art Unit	
	Sikyin Ip	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 December 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *5 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. § 103 as being unpatentable over USP 5638889 to Sugiura et al.

Sugiura discloses that Al-Mg alloy or Mg-Al alloy is heated to solidus temperature (A) with high heat rate (about 3.7 °C/sec), heated at relative slower heating rate to above solidus temperature/semi-molten (B), then kept at temperature (C) (see Figure 12 and col. 14, lines 37-55). Heating rate between temperatures A and B is slower than room temperature to temperature A in order to obtain uniform temperature/zero temperature gradient (col. 14, lines 4247). The heating is applicable to iron alloy also (col. 15, lines 54-58).

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over reference as applied to claim 5 above, and further in view of acknowledged prior art admission.

Sugiura discloses the features substantially as claimed as set forth in the rejection above except for step of setting a sonic velocity. However, acknowledged prior art admission in paragraph bridging pages 13-14 of instant specification discloses it is conventional to use ultrasonic velocity to inspect cast metal in the same field of endeavor or the analogous metallurgical art. Therefore, it would have been obvious to one having ordinary skill in the art of the cited references at the time the invention was made to use ultrasonic velocity for inspect cast product because it is conventional and an ordinary skill artisan motivated by a reasonable expectation of success to use the known process in order to obtain all of the known benefits. In re Aller, et al., 105 USPQ 233.

Response to Arguments

Applicant's arguments filed December 28, 2006 have been fully considered but they are not persuasive.

Claim 5 does not recite heating the Fe based alloy to solidus temperature with high heat rate, and then heating at relatively slower heating rate to above solidus temperature/semi-molten

Applicants argue that " temperature. ~~It is also irrelevant to claim 5, that the heating rate between temperatures A and B~~" But, instant claim 5 does not require to stop heating after point A1 which has lower temperature than solidus temperature.

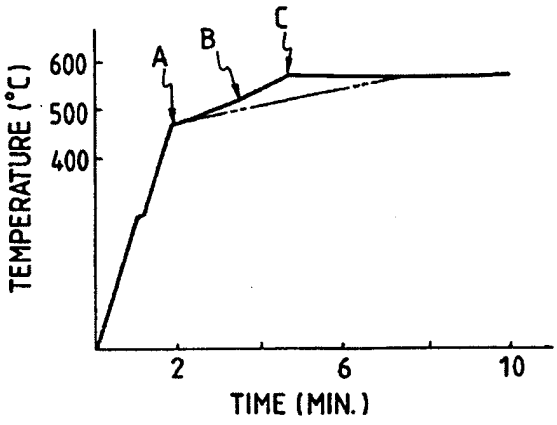
Sugiura does not teach or suggest "heating said Fe-based alloy material setting an average rate H_R of heating from a normal temperature to a point A_1 in an Fe-C based equilibrium diagram to be in a range of $0.5°C/sec \leq H_R \leq 6.0°C$ /sec, and setting a maximum temperature gradient T_G of the inside of the Fe-based alloy material per unit distance to be at $T_G \leq 7°C/mm$."

Applicants argue that " and page 4 of instant remarks" Applicants' attention is directed to col. 14, lines 40-55 below:

heating. That is, it is heated at relatively high speed until its temperature is raised from ordinary temperature to a temperature A (470° C.) corresponding to the solidus, and then heated at relatively slow speed until its temperature reaches a temperature B (560° C.). As a result, the difference in temperature between the inside and the outside of the billet B is zeroed; that is, the billet B is uniform in temperature as a whole, and is held semi-molten, thus being suitable for forging. In the billet at this temperature, the fraction of the liquid phase component is about 46%. Thereafter, the billet is heated at a slightly higher speed to a temperature C (580° C.), and held at the temperature C. In the billet at the temperature C, the fraction of the liquid phase component is increased to 65%. The heating curve passing through the temperatures A, B and C in FIG. 12 may be made dull as indicated by the two-dot chain line.

A1 point temperature in Fe-C phase diagram is lower than solidus temperature and there is no requirement in instant claims to stop heating after A1 point reached. The heated billet temperature of cited reference is uniform which meet instant claimed temperature gradient up to 7°C/mm. The heat rate from Figure 12 of cited reference is about 3.7°C/s from calculation (see pasted Figure 12 below).

FIG. 12



~~More specifically,~~ the portions of Sugiura et al pointed out by the Examiner such as col. 14, lines 37-55 and col. 15, lines 54-58 which relate to Mg-Al alloys, have nothing to do with the claimed invention. ~~Sugiura et al teach that heating is conducted at relatively high speed until the~~ "

Applicants argue that " But, applicants' attention is directed to col. 15, lines 54-58 pasted below:

> In the embodiment, the aluminum alloy billet and the magnesium alloy billet are employed. However, it goes 55 without saying that the technical concept of the present invention is applicable to the molding of other alloy billets such as for instance an iron alloy billet.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See 37 C.F.R. § 1.121 and 37 C.F.R. Part §41.37 (c)(1)(v).

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (571) 272-1241. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (571)-272-1244.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SIKYIN IP
PRIMARY EXAMINER
ART UNIT 1742

S. Ip
March 29, 2007